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ABSTRACT

This paper presents findings of a study that examined the effects of age and gender on the ways in which students in The Netherlands coped with academic and interpersonal stressors. Two types of coping strategies were examined--problem-focused and emotion-focused. Problem-focused coping refers to attempts to alter the stressor through confrontation or planful problem solving. Emotion-focused coping involves attempts to regulate negative emotional reactions to the stressor. The methods used included administration of the Stress and Coping Inventory (SCI) to 1,638 students (418 fifth-graders and 1,265 students in the second grade of secondary education). Interviews were also conducted to determine the extent to which students experienced psychosomatic symptoms. Findings showed that the girls reported more stress than did boys. Students reported more problem-focused coping in response to academic stressors and more emotion-focused coping in response to interpersonal stressors. In addition, emotion-focused coping increased with age. Girls and boys used similar coping strategies in response to academic stressors. However, girls tended to adopt a double-focused approach to interpersonal stressors. These findings indicate that the conflict of interest between allocating resources to gain mastery and maintaining emotional well-being may be stronger in females than in males. In some stressful academic situations, an ambivalent coping strategy may chronically tax personal resources for marginal benefits. In situations involving interpersonal stressors, active coping, coupled with self-management techniques, may enhance female students' stress resistance. Five tables are included. Contains 22 references. (LMI)

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# THE OTHER SIDE OF LEARNING: ALLOCATING RESOURCES TO RESTORE WELL-BEING

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THE OTHER SIDE OF LEARNING:
ALLOCATING RESOURCES TO RESTORE WELL-BEING

Monique Boekaerts

ABSTRACT

In line with the notion emphasizing the role of stressor-specific coping, this paper discusses age and gender effects on coping with academic and interpersonal stressors. Data from a study conducted on students at the end of primary education (10-12) and adolescents (15-16) points to stressor-specific differences in the use of coping strategies. The norm in relation to controllable academic stressors is to respond with problem-focused coping, whereas for interpersonal stressors the norm seems to be emotion-focused coping. Age-specific effects were demonstrated (emotion-focused coping increases with age) as well as gender-specific effects. Consonant with the literature it is suggested that females react differenly to danger signals than do males.

***Control Mechanisms***

Surprisingly little research is available concerning such fundamental question as how students try to regulate their behavior during taxing or stressful learning situations (see Boekaerts, in press a). Over the years I have constructed a theoretical model designed to explore and explain the relationship between different components of the self-regulatory system. This model, termed the model of adaptable learning, is described elsewhere (Boekaerts, 1992, 1993, in press b). It illustrates the links between two interrelated information processing systems, namely the learning system and the coping system. The underlying assumption of the model is that individuals want to enlarge their available resources, but at the same time want to prevent loss of resources and disortions of well-being. At any one time, an individual tries to find a balance between these two priorities. It is further assumed that the information processing modes which underlie these two priorities co-exist but fight for priority in the individual's goal structure.

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Figure 1 about here

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In fact the model of Adaptable Learning is an attempt to present a more comprehensive theoretical integration of findings from theories of Motivation, Action Control, and Stress and Coping. It is argued that when students have to allocate resources to restore well-being, these resources are not available for task processing. Negative feeling states experienced just before and during a learning activity or task compete for energy allocation with the learning activity itself, in the sense that effort, time and attention is required to restore well-being. This competition between learning processes (increase mastery) and coping processes (maintain or restore well-being) is visually represented in the model of Adaptable Learning (see Figure 1). Drawing on the work of Lazarus and

Folkman (1984), Leventhal (1970, 1980), and Kuhl (1985), but also on insights provided by developmental psychologists, such as Fend (1990) and Harter (1982, 1985), I theorized that appraisals and feeling states are important steering mechanisms for allocating resources and for regulating energy. I have studied the influence that these feeling states and situation-specific appraisals have on learning intention, effort expenditure and task performance (see, Boekaerts, Crombach & Voeten, in press; Boekaerts, Vermeer & Seegers, in press; and Seegers & Boekaerts, 1993). Findings show that favorable traits, such as task orientation, enhance task-specific attraction and through it learning intention and feeling states. Unfavourable traits, such as low self-efficacy, fear of failure, ego orientation, and attributing failure to low capacity, are associated with low task-specific confidence. These confidence ratings directly affect task attraction and task performance.

In this article I will further explore the rules that the self-regulatory system follows to regulate itself. In previous publications (e.g., Boekaerts, 1992) a distinction was made between two major components of the self-regulatory system, namely meta-cognitive control and behavioural control mechanisms. The former refers to those processes that direct and steer the information processing flow of the learning process (cf. orienting, planning, monitoring, reflecting, evaluating, repairing). The latter excert control over behaviour in general and not just over the learning process. Various forms of behavioural control may be identified such as motivation control, action control, emotion control, social control, and symptom control. In this paper I will focus on behavioural control mechanisms that initiate and maintain activity in the well-being mode, namely the selection and execution of coping strategies.

***Emotion Control: Coping with Stressors***

In a scholastic context, some students may frequently experience stress because they perceive a mismatch between their felt control over the situation and the coping strategies they can use to alleviate or reduce the experienced stress. I have argued elsewhere (Boekaerts, 1993, in press b) that students have their habitual or preferred ways of forming meta-representations of coping goals and that the procedures they follow to alter stressors and deal with felt emotions are at variance.

Lazarus and Folkman (1984) explained coping with stress in a transactional perspective. They defined stress and coping as a reciprocal process of cognitive appraisal of both stressors and coping resources. Individuals experience stress when they appraise a particular relationship between themselves and the environment as taxing or exceeding their resources and endangering their well-being. Hence, stress lies not in a situation, but in the way an individual perceives and interprets a potential stressor. Cognitive appraisal is a process "through which the person evaluates whether a particular encounter with the environment is relevant to his or her well-being, and if so, in what ways" (Folkman, Lazarus, Dunkel-Schetter, Delongis & Gruen, 1986, p. 992). A new or unexpected situation calls for two types of appraisals: a primary appraisal, or determination of the significance of the event, and a secondary appraisal, or assessment of the sufficiency of coping options to overcome the perceived or anticipated threat presented by the situation. Primary appraisal involves the assessment of whether a situation is beneficial, negative or neutral for well-being. When a person does not perceive a discrepancy between perceived task demands and his or her resources to meet them, he or she may experience little stress. However, when an individual assesses situational demands as exceeding his or her resources, he or she may experience stress, which may be classified as (1) actual harm,

damage or loss; (2) anticipated damage or loss (threat); or (3) anticipated gains, mastery or benefits as a consequence of dealing with the situation (challenge). In secondary appraisals the person assesses what can be done to overcome or prevent harm, or to change the situation for the better. Various coping options are evaluated, such as seeking support, backing out of the situation, or accepting the situation. The two types of appraisals occur simultaneously, and whether or not stress is experienced depends on whether there is balance between the degree to which the source of stress is perceived as harmful, threatening, or boding a loss of some sort (the primary appraisal) and perceived personal and social resources for coping with the stressor (the secondary appraisal). Lazarus and his associates argued that stress should be seen as a process within a time perspective. They drew a distinction between the immediate and the long-term effects of a stressful encounter. Examples of short-term symptomatology include emotional signs of stress (e.g., anxiety, helplessness, discontentment), psychosomatic symptoms (e.g., transpiration, nausea, stomach trouble, headaches) and social consequences (e.g., conflict with peers, teachers or parents). Possible adverse long-term effects include various psychosomatic complaints, such as chronic head and stomach pain, truancy, drop-out and delinquency.

There is a vast amount of evidence documenting that individuals differ in the way they habitually cope with threatening situations. Lazarus and Folkman (1984) defined coping as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the individual" (1984, p. 141). This definition implies a conceptualization of coping behavior which does not encompass involuntary mechanisms (e.g., reflexes and automatic responses). Lazarus and Folkman identified two major functions of coping: viz. problem-focused coping and emotion-focused coping. Problem-focused coping involves attempts to alter the stressor, e.g., confrontive coping, or planful problem solving. Emotion-focused coping refers to attempts to regulate negative emotional reactions to the stressor, such as e.g., cognitive distraction, and self-control. Other researchers proposed their own coping model and used slightly different terms to refer to action directed toward the perceived problem or toward one's feelings, such as approach and avoidance (Suls & Fletcher, 1986), primary and secondary control (Rothbaum, Weisz & Snijder, 1982), danger control and fear control (Leventhal, 1970), vigilance and cognitive avoidance (Krohne, 1993). Coping models explicitly accept that the two coping modes are not mutually exclusive, and that the same individual may use both forms of control, even in one stressful encounter. It is also assumed that in order to self-regulate itself any system has explicit coping goals. These goals, which are based on prior coping experience, bias the selection of coping responses from the coping repertoire. Hence, knowledge of an individual's domain-specific coping goals may explain his or her dominant way of responding to a domain of stressors in terms of either problem-focused coping (approach) or emotion-focused coping (avoidance).

***Negative Feeling States and Coping in scholastic situations***

Very few studies have examined the coping responses students use in everyday school situations. Only limited information is available concerning the salience of the different coping strategies youngsters use in relation to various types of stressors. In a review of the literature of coping with stress in childhood and adolescence, I summarized the findings (cf. Boekaerts, in press a) and concluded that children and adolescents use a wide variety of coping responses to deal with life events and daily hassles. The most salient coping

strategies are problem-focused strategies, such as danger control, seeking social support, and planful problem solving. Various forms of behavioral and cognitive distraction are also frequently used. The least salient coping strategies are anxiety control, aggression, confrontive coping, self-destruction and withdrawal. Findings that link the coping strategies that children and adolescents use to detrimental and beneficial short-term and long-term effects are rare. And, there are hardly any systematic studies on the effectiveness of problem-focused and emotion-focused coping strategies on learning outcome and grade-point-average. Nevertheless, in a learning context it is preached that processes oriented toward the stressor are beneficial and that activities away from the source of stress are detrimental. In that light, teachers insist on immediate approach also when the learner feels ill at ease or threatened by the learning situation. Educators seem to believe that problem-focused strategies have the potential of affecting the nature of the threat and through it reduce tension and discomfort caused by a learning situation. This belief is based on the assumption that students perceive learning situations in class as low in ambiguity and high in controllability. Nevertheless, this assumption contradicts a vast body of empirical findings (see, for example Dweck, 1986; Elias, 1989). There is indeed ample evidence that the perception of excessive academic demands, and low autonomy and controllability in the learning situation create cycles of failure and self blame for many students.

Boekaerts (1993) used the Stress and Coping inventory for children (SCI) to assess the intensity of stress experienced in relation to two specific daily stressors, namely academic stressors and interpersonal stressors. This coping scale presents a set of specific daily hassles. To each stressor a list of ten frequently used coping strategies is attached and students have to indicate how frequently they use each of the coping responses described in the list. Boekaerts predicted that students would perceive some academic stressors as uncontrollable and others as controllable, and that this difference in perception would be evident in their reaction to the stressor. Controllable academic stressors were defined as situations in which students experience stress because they anticipate a possible loss. However, they still believe that they can avoid the negative consequences by reacting aptly to the stressor. For example, the stressor 'When the teacher wants you to take notes and he or she is going fast' can be controlled by the students by various forms of problem-focused coping such as 'write faster', 'increase effort', or 'ask the teacher to slow down'. Uncontrollable stressors refer to situations in which coping attempts may reduce the experienced stress but can not avert the negative consequences. For example, when students are about to take a test for which they are not well prepared, there is not much they can do to avert a low mark. Results indicate that children in the age range from 10-12, who frequently report confrontation with unavoidable failure, prefer various forms of emotion-focused coping (EFC), such as distraction (e.g., 'I think of something pleasant'), denial (e.g.,'I pretend that I do not have to take a test'), or withdrawal (e.g., 'I retreat because I am unable to change the situation'). It was interesting to note, that those students who reported experiencing high anxiety in reponse to uncontrollable academic stressors, favored various forms of problem-focused coping (PFC), such as planful problem solving (e.g., trying to rehearse as much as possible, work harder, pay more attention, make a plan of action) and seeking social support (e.g., asking a fellow-learner to review a few things).

An intriguing question is, why students who experience a lot of stress in response to uncontrollable academic stressors respond with problem-focused coping whereas those who experience low stress respond with emotion-focused coping? One hypothesis is that

the former students may believe that approach will keep them out of danger, whereas the latter students believe that any form of approach will be to no avail because the situation offers little opportunity for autonomy and control. In other words, students who report high levels of emotional turbulence in response to stressful situations may unduely perceive the situation as 'controllable' in the sense that they believe that undesirable loss can still be prevented by investing resources.

Schönpflug (1984) displayed that highly anxious individuals did not differ from their low anxious peers in the number of correct solutions they achieved on a series of mental tasks. However, they executed a larger number of monitoring operations while working, spent more time on the task, and reported more effort and fatigue after doing the task. In a later study, Schönpflug and Battman (1988) provided evidence that increased effort (problem-focused coping) may be seen as a first stage in the coping process. They demonstrated that with increasing discrepancy between task difficulty and intellectual capacity, subjects who had first reacted with increased effort, switched to a guessing strategy (a form of cognitive avoidance) as the stressful experience unfolded. They argued that in everyday life, disengagement, conceptualized as 'giving up', is a common phenomenon in the face of experienced or anticipated loss of personal resources. Moreover, this reaction to stress should be considered 'adaptive' when the situation offers little opportunity for control (uncontrollable stressor), or if the task taxes a person's resources too heavily. Under these conditions, approach or problem-focused coping should be defined as a 'costly coping strategy', that is, as high energy or resource expenditure for marginal benefits.

Perception of control as a variable affecting both the experience of stress and the selection of a coping strategy was studied by Compas, Malcarne and Fondacaro (1988). They set up a study with students in the age range from 10 to 14 and asked them to name one recently experienced academic stressor and one recently identified interpersonal stressor. They also asked subjects to generate a list of all the possible ways they could have handled or dealt with the event and to place a mark next to each item that they actually used to deal with the stressor. Findings revealed that youngsters appraised academic stressors as more controllable than interpersonal stressors. Interestingly, these authors demonstrated that when there was a match between the student's perception of control in a situation (appraisal) and the selected coping mode (e.g., low perceived control and emotion-focused coping, or high perceived control and problem-focused coping) the intensity of the reported stress was low, and vice versa for a mismatch.

On the basis of these findings one would predict that approach in response to academic stressors, preceived by the students as 'controllable' be associated with low rather than with high stress. Hence, we must assume that students who report high stress in response to uncontrollable academic stressors do not perceive these situations as 'controllable'. An alternative hypothesis is that the students who reported stress in response to the depicted academic stressors really communicate a severe mood disturbance because they do not see a way out. In this line of reasoning it could further be assumed that the experience of emotional turbulence in the system prompts an urgent, direct action approach to alleviate the stress symptoms. In other words, anxious students may use various forms of problem-focused coping, not so much in an attempt to change the stressful situation (i.e. to prevent the anticipated loss), but rather in an attempt to alleviate the stress symptoms (bodily arousal). To put it differently, when anticipating uncontollable loss, these students' selection of a coping strategy from the available coping repertoire may be governed by the determination to reduce the experienced stress symptoms as fast

as possible.

Indirect evidence for this 'urgent, tension reduction' hypothesis was provided by the results of multiple regression analyses in which self reported psychosomatic complaints were used as the criterion variable (Boekaerts, 1993). It was displayed that attempts to alleviate stress, particularly anxiety, by means of problem-focused coping strategies were associated with self-reported psycho-somatic complaints when these attempts were undertaken in response to uncontrollable academic stressors. This was not the case in response to controllable academic stressors. This finding suggests that an urgent tension reduction approach by means of problem-focused coping offers short-term benefits (tension reduction) but may harbor a long-term health risk.

***Emotional disturbance and Coping Strategies***

The present study was designed to investigate how students in the age range of 10 - 15 years of age who frequently report stress in response to academic and interpersonal stressors cope with these daily hassles. In line with previous hypotheses, it was predicted that students select coping strategies from the coping repertoire in a stressor specific way: i.e., they rely more on problem-focused coping in relation to controllable academic stressors than on emotion-focused coping strategies. However, in reponse to interpersonal stressors, they use more emotion-focused coping than problem-focused coping. Compas et al., found a modest to moderate correlation between the coping strategies used in response to the two types of stressors. They also reported an increase in the generation of emotion-focused solutions and the use of emotion-focused strategies between the age of 12 and 14, and gender differences in the use of coping strategies. Girls used more emotion-focused coping strategies than did boys in response to academic events.

In line with these findings, it was hypothezised, firstly, that as students get older, they start to use more emotion-focused coping strategies because they have more experierence in deciding whether a situation provides a realistic option for gaining control. Secondly, as far as gender differences are concerned, it was hypothesized that girls would report experiencing more stress than boys in relation to both controllable academic stressors and interpersonal stressors. Seiffge-Krenke (1990) reported that females of all ages assess the same academic and interpersonal stressors as being four times more threatening than boys of the same age. And, that, when a stressful event is over, females still go on thinking about it. Two related hypotheses were formulated as regards the use of stressor-specific coping strategies: emotion-focused coping is the dominant coping mode in relation to interpersonal stressors, but girls and students who report stress in relation to this type of stressor display a higher score than boys and students low on stress. By contrast, problem-focused coping is the dominant coping mode in relation to potentially controllable academic stressors, but girls and students who indicate experiencing more stress display a higher score than boys and students low on emotional turbulence.

In addition to examining the types of coping strategies reported by students high and low on stress and examining gender differences, the relation between the use of stressor-specific coping strategies and psycho-somatic complaints was explored. Previous research has involved the use of self-report complaint instruments (Hendriksen, 1990; Boekaerts, 1993). It suggests that students who report high intensity of stress and approach when confronted with an uncontrollable academic stressor report more psycho-somatic complaints than either students low on stress intensity or students who react to stress with avoidance. In the current study the data on psycho-somatic complaints were of a different

nature. All students taking part in the study visited the school doctor as part of a national health check program. Before the students were seen by the doctor a qualified nurse registered their length, weight, blood pressure, physical signs of puberty and maturity. In addition, the students were asked to provide information on various psycho-somatic complaints such as headaches, tummy aches and insomnia.

The data on psycho-somatic complaints were used to test the hypothesis that both the intensity of stress and the way students react to it may exacerbate reported psycho-somatic complaints in a stressor-specific way. A positive association of the intensity of stress with psycho-somatic complaints may be interpreted as follows: specific stressors are taxing a student's personal resources and may cause chronic or acute emotional turbulence, which may in turn intensify psycho-somatic complaints. The way in which students cope with the experienced stress may enhance or reduce this deterimental effect. In line with this theorizing and the data reported by Boekaerts (1993) and Compas et al., it is predicted that problem-focused coping in response to controllable academic stressors and emotion-focused coping used in response to interpersonal stressors are healthy ways of dealing with stress (in the sense that these forms of coping do not conflict with role demands) and are as such associated with low psycho-somatic complaints. The opposite scoring pattern, namely problem-focused coping in response to interpersonal stressors and emotion-focused coping in reaction to academic stressors, conflicts with role demands and may be associated with higher complaints.

## Method

Subjects were 1683 students; 418 students from the fifth grade of primary education and 1265 students from the second grade of secondary education. All students came form the southern region of The Netherlands. 6% of the students did not have the Dutch nationality. The reported study was part of a larger study investigating the relation between health and personality variables. All students had to participate in the national health check-up programme. Permission was obtained from the respective school principals to administer a battery of psychological tests to the students in the beginning of the school year. Most schools agreed to take part in the psychological part of the study. Primary school students were between 10 and 12 of age (mean age 10.9) and secondary school students were between thirteen and fifteen (mean age was 14.1). The two data sets were analysed separately.

Instruments. In this article only the data relating to stress, coping and psycho-somatic complaints will be discussed. Stress and Coping variables were measured with the Stress and Coping Inventory (Boekaerts, Hendriksen & Maes, 1987). The version that was used in this study consists of four stressful situations: Two controllable academic stressors and two interpersonal stressors. As controllable academic stressors were used: "When the teacher wants you to write down important material and he or she is going fast", and 'When you have an important exam later that day '. The following two interpersonal stressors were used: "You have a conflict with one of your fellow-learners and he/she starts calling you names", and 'The teacher is giving a fellow learner a hard time in class". Frequency of stress experienced in each of the four situations was measured on a four-point-likert-scale. The intensity of stress experienced was measured by three, four-point-likert-scales pertaining to anxiety, anger and sadness experiened in the depicted situations. The highest score on any of the negative emotions was used as an index of

experienced stress. The way students usually cope with each depicted stressor was measured by 10 situation-specific coping responses. Students had to rate on four-point-likert scales how frequently they used each coping response. These scores were factor analysed per situation into EFC and PFC. The reliability of all the factors ranged between .69 and .89. Examples of PFC items are: 'I rehearse between lectures as much as I can' ,'I prompt the fellow-student to be quiet'. Examples of avoidance strategies are: "I try to forget about the exam', 'I don't pay any attention to him or her'.

*Psycho-somatic complaints* were registered by qualified nurses. They asked the students a number of standard questions pertaining to the frequency, the duration, the intensity, and the consequences of psycho-somatic complaints: viz. headaches, tummy aches and insomnia. A frequency judgment was obtained by scoring the answer on the following questions: "Did you suffer from headaches in the last year? How often? (once a week, a few times a week, once a month, a few times a month, once a year, a few times a year". Duration was measured with the question: "How long does this pain usually last? (a few minutes, less than half an hour, between half an hour and an hour, a few hours, longer than half a day)"; and intensity with the question: "How severe is your complaint usually?"( ranging from very mild to very intense).

Procedure. Students completed the SCI as well as other trait lists during regular school hours. The registration of the psycho-somatic complaints was done during the visit to the school doctor which for all students was scheduled some months after completing the paper-and-pencil tests.

*Results*

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Table 1 about here

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The data of students who reported experiencing the four depicted stressors (2 from the academic domain and 2 from the interpersonal domain) were further analyzed (N= 1466; 302 primary school students and 1164 secondary school students). These students indicate that they experience stress in the situations depicted by the SCI. Hence, it is meaningful to investigate further whether there are gender differences in the intensity of the experienced stress and the coping strategies used in relation to academic and interpersonal stressors. The data from 217 students (116 from primary education and 101 from secondary education) were excluded from further analyses because they completed the Stress and Coping Inventory for at least one situation in the hypothetical mode. Means and standard deviations of all variables are printed in Table 1. As can be seen, students display more PFC than EFC in academic situations whereas they show more EFC than PFC in interpersonal situations. These differences are statistically significant. The correlations between stress and coping variables in relation to the two types of stressors are printed in Table 2. (The index of stress was largely determined by the amount of anxiety reported by the students).

As can be viewed from the table, there is a modest (boys) to moderate (girls) consistency in reported emotional turbulence in relation to the two types of stressors. Experienced stress in relation to either stressor is not associated with a specific coping

mode. The correlations between PFC in reponse to the two domains are modest and there are no relations between EFC in response to the two domains. However, it is noteworthy that the correlations between PFC in response to academic stressors and EFC in response to interpersonal problems is moderately strong for all groups. It is also notable that T-tests revealed that girls scored significantly higher on intensity of stress than did boys (X 1.58, sd .39 vs. X 1.41, sd .28).

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Table 2 about here

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In order to test the hypotheses that girls, and students high on reported stress differ from boys and students low on stress, 2 MANOVAS were conducted, one for academic stressors and one for interpersonal stressors. It was predicted (1) that in relation to controllable academic stressors, girls and students who report stress use more problem-focused coping than boys and students who are not plagued by emotional turbulence in academic situations, and (2) that in relation to interpersonal stressors the former groups use more emotion-focused coping than the latter groups. Experienced stress in relation to the respective stressors and gender were used as between factors and emotion-focused coping (EFC) and problem-focused coping (PFC) in response to the 2 stressors were treated as dependent variables. It was found that gender was not associated with the use of either PFC or EFC in response to controllable academic stressors; and that there was no significant 'stress * gender' effect. However, students high on stress reported using more problem-focused coping than students low on stress. In relation to interpersonal stressors the MANOVA yielded a significant stress effect, a gender effect and a 'stress * gender' interaction effect on PFC. In line with the hypotheses, students who reported experiencing stress in relation to interpersonal stressors scored higher on emotion-focused coping, but this difference was not significant. However, they had a significantly higher score than did their peers on problem-focused coping. This was particularly the case for the girls in the sample. Apart from a main gender effect on the use of EFC (girls used more EFC than boys) no significant effects were demonstrated.

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Table 3 about here

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In order to investigate whether there is and age effect on the use of PFC and EFC in response to interpersonal and academic stressors, two further MANOVAS were conducted. Age and gender were used as between factors and emotion-focused coping (EFC) and problem-focused coping (PFC) as dependent variables. The results of the MANOVAS are printed in Table 4, separately for academic and interpersonal stressors. As can be seen there was a significant age effect, no gender effect and a marginally significant 'gender * age' effect on the use of coping strategies in academic situations. The significant age effect is due to differences in means in relation to EFC. In line with our hypothesis, the primary school students reported less EFC than the secondary school students. Inspection of the 'age * gender' effect on the use of coping strategies in relation to academic stressors reveals that the older girls report more EFC than the younger girls, and that there are no differences as far as PFC is concerned. The bottom half of Table 4 displays the

significant effects for interpersonal situations. As can be viewed from the table, the MANOVA showed a significant age effect, a gender effect and an 'age * gender' interaction effect. The age effect is due to differences in PFC: younger students used significantly more PFC than older students. The gender effect can be interpreted as follows: girls make a greater use of problem-focused coping strategies than boys, but, they also report relying more on emotion-focused strategies than boys. Finally, the 'age * gender' interaction effect modifies these differences for PFC but not for EFC: older boys make less use of problem-focused coping strategies than the other three groups.

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Table 4 about here

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In order to gain insight into the association between psycho-somatic complaints and stress and coping variables, a series of multiple regression analyses were computed. Intensity of psycho-somatic complaints was selected as the best outcome variable. Theoretically speaking, girls over 11 may more frequently report head or tummy aches than boys due to menstruation problems. Likewise the duration of the complaints may be biased by the monthly cycle. Inspection of the means and standard deviations revealed that there is less variability in intensity of reported complaints between younger and older girls, and that the difference between the four respective groups are smallest for intensity.

The analyses were conducted separately for the 4 respective groups (older and younger boys and older and younger girls). A set of 3 stressor-specific predictors were used: viz. intensity of stress experienced in relation to the stressor, and the degree to which PFC and EFC were used in relation to both types of stressors. The intensity of aggregated head and tummy aches was used as the criterion variable in each analysis. The results of these analyses are printed in Table 5. As can be seen, the percentages of the variance that was accounted for in psycho-somatic complaints ranged form 1% to 19%. Most variance was explained in the group of the *young boys*. In this group, stress and coping variables were not associated with interpersonal stressors, but stress experienced in relation to controllable academic stressors was positively associated with reported complaints. The way these students deal with experienced academic stress explains additional variance in the criterion variable. Problem-focused coping was negatively associated, while emotion-focused coping was not associated with reported psycho-somatic complaints. This data suggests that young boys who deal with academic stressors by using problem-focused coping report less complaints.

In the group of the *young girls* and that of the *older boys* a similar pattern emerged: The models with the variables measured in relation to academic stressors did not reach significance. (However, Table 1 informs us that in the group of the young girls, there is a moderate correlation between EFC in response to controllable academic stressors and reported psycho-somatic complaints). The predictor set measured in relation to interpersonal stressors explained 4% of the variance in the psycho-somatic complaints reported by the older boys and 11% in the other group. In both groups, intensity of stress and problem-focused coping had significant betas.

Finally, in the group of *older girls* stress and emotion-focused coping are positively associated with complaints, but problem-focused coping does not display the positive association it did in the group of the younger boys.

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Table 5 about here

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## Discussion

These results point to stressor-specific differences in the use of coping strategies, as well as to gender-specific and age-specific effects. Consonant with the findings reported in the literature and with our hypotheses, girls reported more stress than did boys. Further, the reported findings document the view that students, paricularly girls, who report stress in relation to academic stressors also largely do so in relation to interpersonal stressors. This finding suggest that for boys the experience of emotional turbulence in the system is more stressor-specific than for girls. The correlational data suggests that experienced stress in relation to either type of stressor is not directly linked to a specific coping mode. But, students who use problem-focused coping strategies in response to academic stressors tend to use emotion-focused coping in response to interpersonal stressors.

Further evidence for stressor-specific forms of coping was obtained via the MANOVAS. In accordance with the literature, students reported more problem-focused coping than emotion-focused coping in response to academic stressors, and more emotion-focused coping than problem-focused coping in response to interpersonal stressors. Contrary to our expectations, girls did not differ from boys in the coping strategies they use in response to academic stressors. But, students who reported stressor-specific emotional turbulence used more problem-focused coping than students who did not. There were no differences in the use of problem-focused coping between the younger and the older students. However, in line with our predictions, the older students used more emotion-focused coping than the younger students, particularly the girls did. As a group, the young girls reported the least emotion-focused coping strategies.

As regards interpersonal stressors, it was predicted that girls and students who are plagued by stress in these situations would display more emotion-focused coping. This prediction held true only for the girls in the sample. However, contrary to expectation, both these groups displayed a high score on problem-focused coping. This data suggests that girls adopt a double-focused approach to interpersonal stressors. Interestingly, the older students in the sample did not differ from the younger students in their use of emotion-focused coping, but they used significantly less problem-focused coping, particularly the older boys, than did the younger students.

Linking these findings to the data from the multiple regression analyses suggests that for these age groups the norm in relation to controllable academic stressors is to respond with problem-focused coping, whereas for interpersonal stressors the norm is emotion-focused coping. More specifically, when students are confronted with controllable academic stressors they try to change the situation for the better by active forms of coping. And, emotional turbulence experienced in these situations stimulates rather than impedes the use of problem-focused coping strategies. It is interesting to note that in 2 of the 4 groups (boys between 10 and 11 of age and in girls between 15 and 16), emotional turbulence experienced in academic situations was associated with reported head and tummy aches. It is also remarkable that young boys who deal with this type of stressor with problem-focused coping report few complaints, and that adolescent girls who use emotion-focused coping report more complaints.

When students are confronted with interpersonal stressors they primarily use

emotion-focused coping. This is probably due to the dominant school culture. Girls report using more emotion-focused coping strategies than do boys, but they also report using more problem-fosused coping strategies. Further, it is interesting to note that in 2 of the 4 groups (girls between 10 and 11 of age and in boys between 15 and 16), reported stress in response to interpersonal stressors is associated with reported head and tummy aches. In all the groups, except the group of the young boys, problem-focused coping is associated with more complaints. In none of the four groups there is an association between emotion-focused coping and reported complaints.

More research is needed to clarify these relations. At the moment, it seems warranted to suggest that normative coping (i.e., problem-focused coping in response to controllable academic stressors, and emotion-focused coping in response to interpersonal stressors) is not associated with psycho-somatic complaints. Non-normative forms of coping seem to be negatively associated with psycho-somatic complaints, but age and gender specific effects are evident.

I have argued elsewhere (Boekaerts, in press a) that individuals represent a stressor on the basis of a number of dimension-wise judgments of the stressful situation (e.g., valence, controllability, changeability, ambiguity, familiarity) and that these appraisals shape and re-shape the meta-representation of a stressor. As such, appraisals are steering mechanism for taking decisions about whether to act or not to act, and in what way (coping intention). Understanding how youngsters of both sexes, of different age groups and of different cultures classify and represent stressors and how their appraisals and feeling states steer the selection of coping strategies from the coping repertoire will shed some light on their situation-specific coping intentions and on the unique ways in which coping intentions are linked to coping goals and preferences.

I would like to speculate that most students interpret felt stress (or anxiety) as a danger signal. This powerful signal may urge them to allocate their resources primarily to avert negative consequences (problem-focused coping). At the same time, they may feel the desire to protect their ego by opting out of the situation either literally or mentally (emotion-focused coping). This multiply coping goal promotes double-focused coping intentions and may prompt continuous switching from the well-being mode to the mastery mode. Some students may want to stay long enough in the mastery mode to ensure gains in resources, but they also keep a close eye on distortions in well-being (threat signals) in order to disengage when negative consequences are eminent.

The finding that females of all ages report more stress and that it ruminates longer in their system, taken in connection with the finding that girls display more double-focused coping intentions than boys, suggests that girls react differently to danger signals than do boys. More specifically, such findings suggest that in females the conflict of interests between allocating resources to gain mastery (increase personal resources) and to maintain well-being (protect their ego, ensure social belonging, etc.) may be stronger than in males, and may have a stressor-specific effect: In some stressful situations, amongst which academic stressors, an ambivalent coping strategy may chronically tax personal resources for marginal benefits (cf., the costly coping style described by Schönplug and Battman). In other stressful coping situations, amonst which interpersonal stressors, active coping, coupled with attempts to keep one's well-being within reasonable bounds (e.g., by social sharing or distraction) may work in tandem to benefit females' stress resistance (cf. Hobfoll, Dunahoo, Ben-Porath, and Monnier, 1994).

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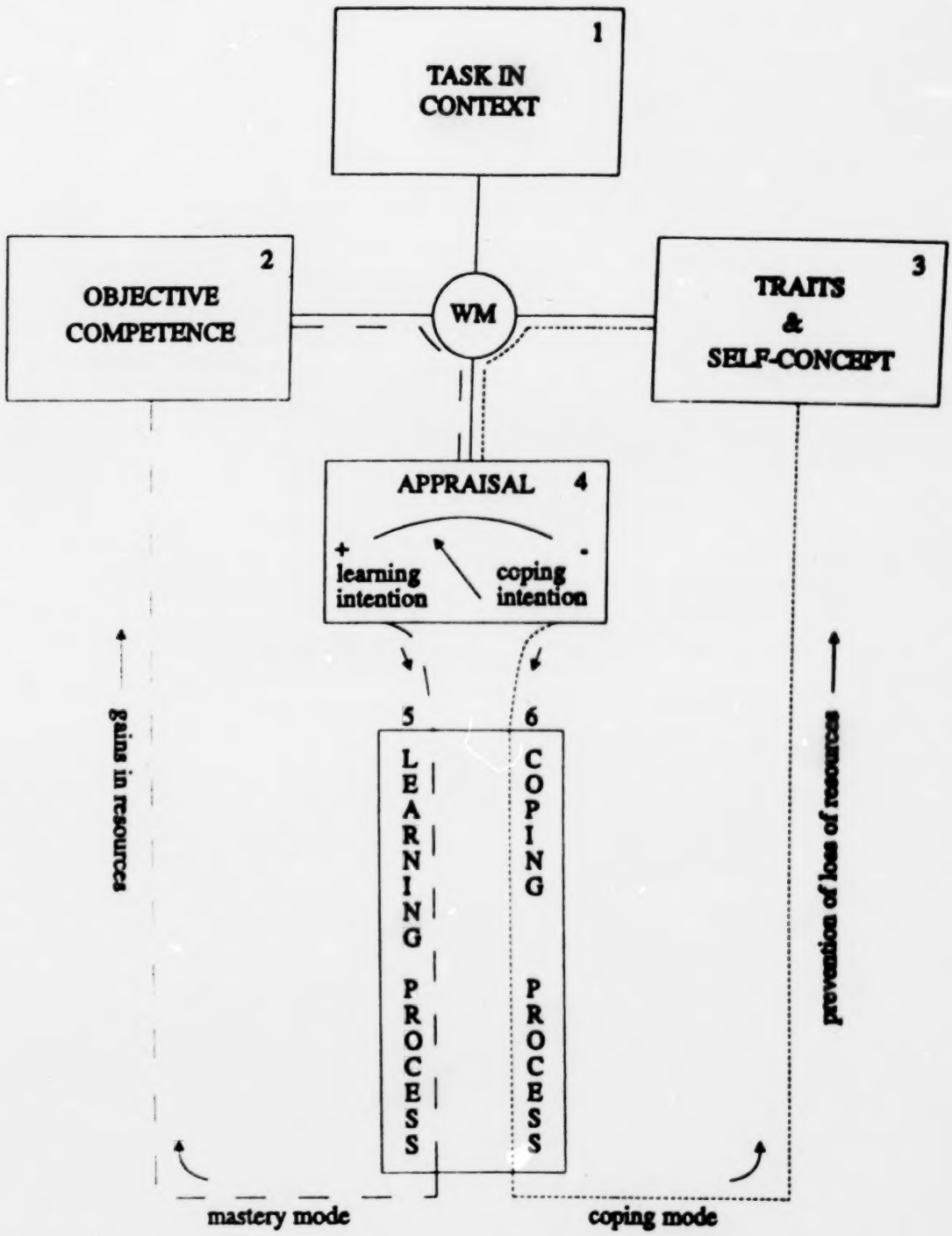


Figure 1. Heuristic model of the affective learning process

Table 1.
Means and standard deviations of the 6 variables used in this study, separately for the four respective groups after controlling for occurrence of the respective stressors. Younger students (10-12); N=302, 167 boys and 135 girls and older students (13-15); N= 1164, 621 boys and 543 girls

| | HEADACHE AND TUMMY ACHES | | | | | | STRESS AND COPING | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | frequentie | | duration | | intension | | STRESS | | PFC | | EFC | |
| | X | SD | X | SD | X | SD | X | SD | X | SD | X | SD |
| Young boys | 2.68 | 1.17 | 2.87 | 1.18 | 2.87 | .90 | 1.24<br>1.34 | .35<br>.38 | 1.54<br>2.60 | .41<br>.45 | 2.11<br>1.93 | .53<br>.36 |
| Young girls | 3.17 | 1.40 | 2.89 | 1.22 | 2.93 | .85 | 1.46<br>1.60 | .56<br>.65 | 1.66<br>2.64 | .40<br>.43 | 2.23<br>1.76 | .49<br>.33 |
| Older boys | 2.46 | .95 | 2.89 | 1.09 | 2.93 | .74 | 1.24<br>1.33 | .37<br>.37 | 1.33<br>2.61 | .36<br>.48 | 2.13<br>1.92 | .53<br>.43 |
| Older boys | 3.14 | 1.18 | 3.10 | 1.06 | 2.98 | .82 | 1.45<br>1.35 | .53<br>.41 | 1.52<br>2.63 | .41<br>.46 | 2.31<br>2.00 | .51<br>.45 |

In the right part of the table, the first row refers to interpersonal stressors and the second row to academic stressors

Table 2.
Pearson Product Moment correlations between psycho-somatic complaints, intensity of stress, problem-focused coping and emotion-focused coping in response to academic (AC) and interpersonal stressors (IP), separately for students from primary education (boys top row, girls second row) and secondary education (boys third row and girls bottom row)

| | STRESS (IP) | PFC (IP) | EPC (IP) | COMPL. |
|---|---|---|---|---|
| STRESS (AC) | .22 | .10 | .07 | .31 |
| | .59 | .08 | .09 | .13 |
| | .25 | .20 | -.07 | .08 |
| | .40 | .12 | .12 | .18 |
| PFC (AC) | -.03 | .19 | .34 | -.33 |
| | -.02 | .18 | .29 | .01 |
| | -.04 | .24 | .26 | -.01 |
| | .04 | .18 | .32 | .05 |
| EFC (AC) | .03 | .20 | .01 | .17 |
| | .18 | .08 | .03 | .34 |
| | .04 | .05 | .04 | .06 |
| | -.07 | .22 | .02 | .21 |
| COMPLAINTS | -.09 | .03 | .02 | |
| | .26 | .26 | -.07 | — |
| | .14 | .13 | -.07 | |
| | .06 | .19 | -.09 | |

Table 3.
Results from MANOVA: Gender effect, Stress effect, and Gender * stress interaction effect for interpersonal stressors

| | | INTERPERSONAL STRESSORS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Stress λ= .972*** | | | Gender λ= .944*** | | | Stress * Gender λ= .991** | | | |
| | | X | SD | | X | SD | | X | SD | | X | SD |
| PFC | Low | 1.41 | .38 | Boys | 1.39 | .38 | Low Boys | 1.36 | .38 | Low Girls | 1.47 | .39 |
| | High | 1.53*** | .38 | Girls | 1.56** | .41 | High Boys | 1.41 | .38 | High Girls | 1.64* | .44 |
| EFC | Low | 2.16 | .54 | Boys | 2.15 | .51 | Low Boys | 2.06* | .54 | Low Girls | 2.27 | .54 |
| | High | 2.26 | .49 | Girls | 2.29*** | .51 | High Boys | 2.24 | .50 | High Girls | 2.30 | .49 |

Table 4.
Results from MANOVA: Age, Gender, and Age * Gender effects, separately for academic and interpersonal stressors (PE= primary education, SE= secondary education)

| | | ACADEMIC STRESSORS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Age λ= .970*** | | Gender = .999 (NS) | | Age * Gender λ= .994* | | | | | |
| | | X | SD | | X | SD | | X | SD | | X | SD |
| PFC | PE | 2.68 | .45 | Boys | 2.67 | .47 | PE Boys | 2.67 | .46 | PE Girls | 2.70 | .47 |
| | SE | 2.68 | .47 | Girls | 2.69 | .46 | SE Boys | 2.68 | .48 | SE Girls | 2.69 | .46 |
| EFC | PE | 1.78 | .38 | Boys | 1.85 | .41 | PE Boys | 1.84 | .41 | PE Girls | 1.74* | .36 |
| | SE | 1.89* | .44 | Girls | 1.81 | .41 | SE Boys | 1.86 | .42 | SE Girls | 1.92 | .45 |
| | | INTERPERSONAL STRESSORS | | | | | | | | | |
| | | λ= .970*** | | | λ .962*** | | | λ= .994* | | | |
| | | X | SD | | X | SD | | X | SD | | X | SD |
| PFC | PE | 1.60* | .42 | Boys | 1.44 | .37 | PE Boys | 1.56 | .42 | PE Girls | 1.65 | .43 |
| | SE | 1.41 | .37 | Girls | 1.59* | .42 | SE Boys | 1.32* | .38 | SE Girls | 1.55 | .44 |
| EFC | PE | 2.17 | .51 | Boys | 2.13 | .54 | PE Boys | 2.12 | .55 | PE Girls | 2.23 | .47 |
| | SE | 2.16 | .53 | Girls | 2.24* | .50 | SE Boys | 2.08 | .54 | SE Girls | 2.25 | .54 |

Table 5.
Multiple regression model with intensity of psycho-somatic complaints as criterion variable, separately for boys and girls from primary and secondary education

| predictors | young boys (10-11 years) | older boys (15-16 years) | young girls (10-11 years) | older girls (15-16 years) |
|---|---|---|---|---|
| | | INTERPERSONAL STRESSORS | | |
| | $R^2$= 1% F= .27 NS | $R^2$= 11% F= 3.09* | $R^2$= 4% F= 3.64* | $R^2$= 4% F= 3.72* |
| | ß | ß | ß | ß |
| STRESS | -.09 | .20* | .14* | .05 |
| PFC | .05 | .19* | .12* | .18** |
| EFC | .01 | -.03 | -.09 | -.07 |
| | | ACADEMIC STRESSORS | | |
| | $R^2$= 19% F= 4.05* | $R^2$= 12% F= 1.92 NS | $R^2$= 1% F= .76 NS | $R^2$= 8% F= 8.41*** |
| | ß | ß | ß | ß |
| STRESS | .26* | -.01 | .08 | .17** |
| PFC | -.27* | .08 | .06 | .04 |
| EFC | .14 | .36 | -.01 | .22*** |